

RECEIVED  
CENTRAL FAX CENTER

AUG 30 2007

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

- 1        1. (original) A method for use in watermarking a video signal, the method comprising the steps of:
  - 3              replicating at least selected ones of bits of additional information to be impressed upon a video signal by placing said bits into at least one selected bit of an average value of a chrominance portion over a block of said video signal; and
  - 6              supplying said original and replicated bits to be impressed in the same block position in successive frames.
  
- 1        2. (original) The invention as defined in claim 1 wherein said block position is based on said video signal having one Y, one U and one V value for every 2x2 block of full resolution of an original input video signal.
  
- 1        3. (original) The invention as defined in claim 1 wherein all of said bits of additional information that are to be impressed on a first one of said successive frames are replicated to be impressed on at least a second one of said successive frames that is for display without any frame being displayed between said first frame and said second ones of said successive frames.
  
- 1        4. (original) The invention as defined in claim 1 further comprising the step of adding an offset bias to an average value of a chrominance portion of at least one block of at least one frame of said successive frames that have said original and replicated bits impressed upon them in the same block positions.
  
- 1        5. (original) The invention as defined in claim 4 wherein said offset bias is independent of a busyness measure of said block.

1       6. (original) The invention as defined in claim 4 wherein said offset bias is  
2 independent of any value added to said average value to bring said average value within a  
3 safe range.

1       7. (original) The invention as defined in claim 4 wherein said offset bias is a first  
2 offset bias that is a positive value added to a first one of said successive frames, and  
3 wherein said method further comprises the step of adding a second offset bias to an  
4 average value of a chrominance portion of at least one block of at least a second frame of  
5 said successive frames that have said original and replicated bits impressed upon them in  
6 the same block positions, said second offset bias being a negative value.

1       8. (original) The invention as defined in claim 4 wherein said offset bias is a first  
2 offset bias that is a positive value added to a first one of said successive frames, and  
3 wherein said method further comprises the step of adding a second offset bias to an  
4 average value of a chrominance portion of at least one block of at least a second frame of  
5 said successive frames that have said original and replicated bits impressed upon them in  
6 the same block positions, said second offset bias being a negative value and said at least  
7 one block of said at least second frame being like-positioned within said at least second  
8 frame as said at least one block of said first frame.

1       9. (original) The invention as defined in claim 4 wherein said offset bias is small  
2 relative to the change required in said average value to place said bits into said at least  
3 one selected bit of an average value.

1       10. (original) The invention as defined in claim 4 wherein additions are made to  
2 the chrominance portion of ones of the pixels of said at least one block until total of such  
3 additions equals the product of said offset bias and the number of pixels in a block, said  
4 additions being independent of any other changes made to the chrominance portion of  
5 said ones of the pixels.

1        11. (original) The invention as defined in claim 1 further comprising the step of  
2        including a prescribed data sequence within said additional information to be impressed  
3        upon a chrominance portion of said video signal.

1        12. (original) The invention as defined in claim 11 wherein said prescribed data  
2        sequence is known to a receiver of said video signal after it is watermarked.

1        13. (original) The invention as defined in claim 11 wherein said prescribed data  
2        sequence is a Barker sequence.

1        14. (original) The invention as defined in claim 11 wherein said prescribed data  
2        sequence is impressed, at least in part, upon prescribed blocks of at least one frame of  
3        said video signal.

1        15. (original) The invention as defined in claim 11 wherein said prescribed data  
2        sequence is impressed in its entirety upon prescribed blocks of one frame of said video  
3        signal.

1        16. (original) The invention as defined in claim 11 wherein said prescribed data  
2        sequence is impressed upon like-positioned prescribed blocks of multiple ones of frames  
3        of said video signal.

1        17. (original) The invention as defined in claim 11 wherein replicas of said  
2        prescribed data sequence in its entirety are impressed upon like-positioned prescribed  
3        blocks of respective ones of multiple frames of said video signal.

1        18. (original) The invention as defined in claim 1 further comprising the step of  
2        including a known data sequence within said additional information to be impressed upon  
3        a chrominance portion of said video signal, wherein said known data sequence is  
4        intermixed among said additional information so as to be scattered among the blocks of a  
5        frame.

1        19. (original) The invention as defined in claim 1 further comprising the step of  
2 including a known data sequence within said additional information to be impressed upon  
3 a chrominance portion of said video signal, wherein said known data sequence is  
4 intermixed among said additional information so as to be scattered among the blocks of a  
5 frame, said scattering being different for different suppliers of said additional  
6 information.

1        20. (original) A method for use with a receiver of a video signal containing  
2 additional information impressed upon a chrominance portion of said video signal, the  
3 method comprising the step of:

4              combining extracted initial additional information of like block positions from  
5 prescribed frames to determine the final additional information;  
6              supplying as an output said final additional information.

1        21. (original) The invention as defined in claim 20 wherein said prescribed  
2 frames are successive frames.

1        22. (original) The invention as defined in claim 20 wherein said prescribed  
2 frames are successive frames as transmitted in said video signal.

1        23. (original) The invention as defined in claim 20 wherein said prescribed  
2 frames are successive frames when displayed.

1        24. (original) The invention as defined in claim 20 further comprising the step of  
2 determining a quality of each of said prescribed frames that are combined in said  
3 combining step; and

4              wherein in said combining step said initial additional information of like block  
5 positions from said prescribed frames is combined as a function of said determined  
6 quality for each of said prescribed frames.

1        25. (original) The invention as defined in claim 21 wherein said determined  
2        quality for each of said frames is a function of the number of errors in each of said frames  
3        for a known data sequence which is embedded in expected ones of the blocks of each of  
4        said frames.

1        26. (original) The invention as defined in claim 21 wherein when said determined  
2        quality for a frame is below a prescribed threshold, said frame is treated as if it contains  
3        no additional information.

1        27. (original) The invention as defined in claim 21 wherein said determined  
2        quality is expressed as a weight value, one weight value being developed for each frame.

1        28. (original) The invention as defined in claim 21 wherein said final additional  
2        information is supplied to a channel decoder which treats said final additional  
3        information as soft bits.

1        29. (original) Apparatus for use in watermarking a video signal, comprising:  
2              means for replicating at least selected ones of bits of additional information to be  
3        impressed upon a video signal by replacing a selected bit of an average value of a  
4        chrominance portion over a block of said video signal; and  
5              means for supplying said original and replicated bits to be impressed in the same  
6        block position in successive frames.

1        30. (original) A method for use in watermarking a video signal, the method  
2        comprising the steps of:

3              inserting in prescribed block positions of prescribed frames of said video signal at  
4        least one unique identifying code by replacing a selected bit of an average of a  
5        chrominance portion over said blocks.

1        31. (original) The invention as defined in claim 30 wherein said identifying code  
2        is a Barker sequence.

1       32. (original) The invention as defined in claim 30 wherein said prescribed code  
2 identifies said prescribed frames as belonging to a unitary sequence.

1       33. (original) The invention as defined in claim 30 wherein said prescribed code  
2 identifies said prescribed frames as belonging to a unitary sequence, and said method  
3 further comprising the step of:

4       inserting in other prescribed block positions of said prescribed frames at least one  
5 secondary unique identifying code by replacing a selected bit of an average of a  
6 chrominance portion over said blocks.

1       34. (original) The invention as defined in claim 33 wherein said at least one  
2 secondary unique identifying code is made up of a series of codes that distinctly identifies  
3 individual frames of said prescribed frames.

1       35. (original) The invention as defined in claim 33 wherein said at least one  
2 secondary unique identifying code is made up of a series of codes that distinctly identifies  
3 groups of frames of said prescribed frames, at least one of said groups of frames including  
4 a plurality of frames.

1       36. (currently amended) A receiver for extracting additional information from a  
2 video signal containing said non-video information impressed upon a chrominance  
3 portion of said video signal, comprising

4       an extractor for extracting said non-video information from said video signal; and  
5       a sequence processor receiving at least said extracted non-video information and  
6 detecting at least one prescribed sequence that was impressed upon at least one frame of  
7 said video signal and for determining a number of errors in said at least one prescribed  
sequence for each of a plurality of grouped frames: and

8       a frame weighting unit which uses a per-frame quality measure derived as a  
9       function of said number of errors in each of said plurality of frames to combine extracted  
10      like-block positioned non-video information from said plurality of frames into an output  
11      value for said block position for said grouped frames.

1       37. (canceled)

1       38. (currently amended) ~~The invention as defined in claim 36 wherein said~~  
2 ~~sequence processor determines a number of errors in said at least one prescribed sequence~~  
3 ~~for each of a plurality of grouped frames, said receiver further comprising:~~

4           A receiver for extracting additional information from a video signal containing  
5 said non-video information impressed upon a chrominance portion of said video signal,  
6 comprising

7           an extractor for extracting said non-video information from said video signal; and  
8           a sequence processor receiving at least said extracted non-video information and  
9 detecting at least one prescribed sequence that was impressed upon at least one frame of  
10 said video signal and for determining a number of errors in said at least one prescribed  
11 sequence for each of a plurality of grouped frames;

12          a frame weighting unit which uses a per-frame quality measure derived as a  
13 function of said number of errors in each of said plurality of frames to combine extracted  
14 like-block positioned non-video information from said plurality of frames into a soft data  
15 output value for said block position for said grouped frames; and

16          a channel decoder for decoding said soft values.

1       39. (new) A method for use in watermarking a video signal, the method  
2 comprising the steps of:

3           replicating at least one bit of additional information to be impressed upon said  
4 video signal;

5           supplying said original and replicated bits in a manner so that they are to be  
6 impressed in the same block position in successive frames;

7           wherein said original and replicated bit are each impressed upon their respective  
8 block of said video signal by placing their respective values in at least one bit position of  
9 an average value of a chrominance portion over said respective blocks.